

AMATEUR SATELLITE REPORT

AMSAT's Newsletter for the Amateur Space Program.



Amateur Satellite Report is endorsed by the American Radio Relay League as the special interest Newsletter serving the Amateur Radio Satellite Community

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Call For Nominations

AMSAT Headquarters announces that nominations for the office of Member of the Board of Directors are now in order. The seats of four directors—John Henry, VE2VQ, Jan King, W3GEY, John Browning, W6SP, and John Pronko, W6XN—are up for election in this cycle. Last November three directors (Thomas Clark, W3IWI, Vern Riportella, WA2LQQ, and Harry Yoneda, JA1ANG) were elected. The term of office is two years.

An AMSAT member who agrees to serve can be nominated by any five current AMSAT members or by an AMSAT member society. Nominating petitions may be sent to: AMSAT, 850 Sligo Ave., Silver Spring, MD 20910.

Petitions must arrive at AMSAT not later than July 31, 1985. Nominees will be asked to provide minimal background and biographical data for inclusion with the ballot forms.

Publisher Wanted

AMSAT is soliciting applications for the position of volunteer publisher of *Satellite Journal*. The successful applicant should be a radio amateur with experience in business, preferably publishing. He or she should be capable of handling an important and highly visible position within the AMSAT organization and the amateur-radio community.

Responsibilities of the position include administration of advertising sales efforts, management of the magazine's budget, and policy determination in concert with the editor and key AMSAT officers.

Remuneration includes a sense of accomplishment in helping further the goal of AMSAT to provide reliable satellite facilities and services to radio amateurs. It also includes valuable experience in the administration of an important, technically-oriented publication, as well as an opportunity to learn and help the amateur-radio manufacturing and sales industry in the U.S. and abroad.

Teacher in Space

An AMSAT member, Jeannine Duane of Long Valley, New Jersey, is among 118 semifinalists competing for a chance to be the first citizen space traveller. Jeannine,

WB2MBW, is a teacher at the Black River Middle School in Chester, New Jersey.

In response to President Reagan's suggestion that it would be fitting that a teacher be the first citizen invited for a ride in the space shuttle, Jeannine joined 40,000 others in mailing in an application. Her selection as one of two teachers from New Jersey to compete for the prized berth on the shuttle was announced by Governor Thomas Keane.

Plans now call for a meeting of all 118 semifinalists in Washington, DC in late June. After an evaluation, 10 teachers will be selected for an intensive review at the Johnson Spaceflight Center in Texas. The field will be narrowed to five before just two are selected to be the prime candidate and the back-up.

Jeannine is married to Richard Duane, WB2VAT. She has taught all levels of school, including classes for the talented and gifted, and has made science and amateur radio in particular, tools for use in the classroom. A teacher for 30 years, Jeannine has been a ham for 17. She and her husband have been AMSAT members since the late 1970s.

Short Bursts

- In new AMSAT appointments, Joe Flaska, WB0RLY, has been appointed Area Coordinator for Colorado replacing K0RZ who is busy on the S-Band transponder for P3C. WB0RLY joins W0VO in Colorado as Area Coordinator. Other new Area Coordinator Appointments announced recently include Robert Thannish, KN5D, AAC for New Mexico; Lee Owens, W6IFW, AC for Kansas; Vic Politi, W1NU, AC for Connecticut; Ken Cole, KY7J, AC for Idaho; Dan Coleman, W0UFZ, AC for Nebraska. Mike Crisler, N4IFD, has been appointed Assistant VP for Hamfests/Conventions by Executive VP K8OCL. President WA2LQQ has appointed WB8ZTV, Don Knollinger, Special Assistant/Gateway Coordinator reporting to the Vice President of Operations. Congratulations to the new appointees!

- Radiokit of Greenville, NH has a version of the G3RUH PSK demodulator available for \$135. At presstime they hadn't got all the bugs out but were hopeful it would be up to snuff soon. Check with them before purchasing. Problems had to do with lock-loss with temperature and voltage stability likely the cause. Otherwise may be useful for your shack. RS-232C output.

- AMSAT/VITA meeting is shown in the "Up Front" sec-

tion of the May QST, page 12.

- W8CA will be joining the AO-10 satellite bulletin team in early June. Nick will be concentrating on Mode B bulletins during the week while WA2LQQ will carry the weekend duty. W8GQW will be doing both as time allows. Wray will be moving to Arizona permanently this year and so his exact schedule is in flux.
- Indications were at presstime that the re-orientation of AO-10 for nadir pointing at apogee which had been due for completion on 1 May was incomplete. Substantial spin modulation is the tip-off.
- The ARRL Matching Fund drive is in full swing now. Every \$10 donated generates \$20; every \$50 yields \$100, etc. Simply send your tax deductible donation to AMSAT, ARRL Matching Fund, P.O. Box 27, Washington, D.C. 20044. Show your appreciation for all the fun you have with OSCAR with a generous donation, today!

Teleconference Net To Feature AMSAT Speakers

On Friday evening, June 14, once again the North American Teleconference Radio Net (TRN) will air with AMSAT as the theme. When last heard on the TRN on December 1, 1983 (see ASR #67) AMSAT speakers addressed more than 30,000 listeners. This year the listener base promises to exceed 50,000 according to reliable estimates. Nearly 250 repeaters may be linked together for the event.

At presstime planning was in progress for the event, the high point of AMSAT's development campaign for 1985. Speakers already identified included some of the best AMSAT has to offer. W6SP, W3IWI, W3GEY, NK6K, W3XO, K8OCL and WA2LQQ will lead the listener through virtually every facet of OSCAR satellites during the 90 minute telecast.

Speakers will gather in Silver Spring, Detroit, Boulder and Los Angeles for the event. Repeater across North America will be linked to provide real-time coverage. Recordings of the event will be re-broadcast later over AO-10.

Area Coordinators are especially encouraged to coordinate local presentations to clubs and informal groups with the TRN.

June Is AMSAT Hi-Pro Month

According to AMSAT President WA2LQQ, this June will mark the kickoff of a special AMSAT Hi-Profile campaign to focus attention on AMSAT and ultimately to bring in new members. Several major events are coordinated to bring OSCAR and AMSAT high into the consciousness of hams.

The Teleconference Radio Net June 14 is the centerpiece. (See story elsewhere in this issue.) Other attractions include the ARRL Field Day. This has always been a fine opportunity for newcomers to see satellite activity in action. AO-10 will be in Mode B throughout Field Day this year.

In the print media AMSAT will kick off a new ad campaign with a dazzling new ad in the June QST. Moreover, a new satellite column debuts in June QST; one that seeks to entice the many standing on the sidelines to try satellites for themselves.

All Area Coordinators who make presentations during June (especially those coinciding with the TRN) are encouraged to send photos and stories to ASR so we can feature YOUR fine work for AMSAT!

First ZRO-Test Is History

The first record run of the ZRO-Memorial Technical Achievement Award for Station Engineering is now history! The first run took place early Sunday morning on 5 May at 1130 UTC. The object of the test is to provide objective standards for calibrating satellite receive sensitivity measurements. First indications were that scores of stations took part with several hearing the weakest signal levels of 18 dB below the beacon.

There were 7 levels transmitted in the format described in ASR 101/102. Level 0 was at the beacon level and represented a transmitted ERP of nearly 2000 watts, far exceeding the recommended levels. Remarkably, several European stations including a notorious French station exceeded the beacon by more than 10 dB suggesting an ERP exceeding 20 kW!

On the low end of the test, several stations heard the level 6 transmission at beacon - 18 dB. The transmit level at the lowest test level was just over 30 watts ERP.

No Mode L tests were made on this occasion.

Entries should be in the following format:

1. Callsign and address of contestant.
2. Date of test
3. Number groups of each level copied, e.g. level 0: 12345; level 1: 23456; level 2: 34567; level 3: 45678; level 4: 56789; etc.

Cost of entry is as follows: Current AMSAT member: \$3.50. (include member number). Non-Member \$5.00. Covers cost of certificate, mailing and subsequent endorsements. Make checks payable in U.S. dollars to AMSAT. Mail to AMSAT, P.O. Box 177, Warwick, NY 10990. An SASE is appreciated. Entries must be submitted within 120 days of the test. Next run will be on 24 May at 1015 UTC. Frequency will again be 145.840 MHz.

The handsome certificate has the basic award in your call-sign together with space for all endorsements for higher levels of achievement in both Mode B and Mode L. The endorsements are in the form of silver and gold satellite stickers denoting the level of achievement attained by the certificate holder; a proud addition to your shack indeed!

Dayton Success Shatters Prior Marks

The 1985 Dayton Hamvention set a new high water mark as far as AMSAT's presence and overall AMSAT goals. There were more AMSAT forums, more top-notch speakers, more new software, larger booths, higher donations and more new members and renewals than ever before. The success capped a year long planning effort by W8GQW, W8JLE and K8OCL along with a supporting crew of local Area Coordinators.

As detailed in *Satellite Journal* #4, the program was chock full with AMSAT forums on Friday, Saturday and Sunday.

Under the skillful moderation of W8GQW, W8JLE and KB2M, all the forums came off like clockwork. The forum rooms were generally packed to overflowing with excellent presentations made by all.

Speakers included W6SP, W4RI, NK6K, W3IWI, K8MU, KE3D, N4HY, JA1ANG, WA2LQQ, ZS6AKV, K8OCL, WA6YBT, N8ETY, WB8ZTV, WA8RYD, W3XO and WB8WKA.

Activity at the dual-booth was hectic. Several new tracking software packages stirred interest among newcomers and veterans alike. The VR-85 by W6WKN et al with its graphics capability for the Commodore 64 was very popular. Similarly the new QUIKTRAK by N4HY for the IBM-PC was on display. Roy Welch, W0SL, demonstrated his new graphics-capable tracking program for the IBM-PC. All these programs are now available from the AMSAT Software Exchange. N4HY reported later that a minor glitch developed in the QUIKTRAK version designed for the C-64. He and KA2MUM found a simple fix. They say to add a new line at 5325 which says PRINT "<cntr 7>".

New members totaled over a hundred while renewals edged towards 50 according to Martha Saragovitz who made the trip to Dayton this time. Husband John, N4QQ, accompanied Office Manager Ms. Saragovitz. Martha indicated that in all, donations exceeded \$10,000 topping the prior record by nearly \$3,000 due in large part to the tremendous support from those staffing the booth and the excellent organization of this year's activities.

New AMSAT Presidents Attend Dayton Hamvention

AMSAT Presidents from four national AMSAT organizations attended this year's Dayton Hamvention. Harry Yoneda an AMSAT Director for several years, was recently elected President of JAMSAT, our Japanese affiliate. Harry had been on the Board of JAMSAT and recently was elected JAMSAT President following the untimely passing of JA1NET.

Also present was Junior DeCastro, PY2BJO, President of the newly formed Brasil AMSAT called BRAMSAT. Junior tells ASR he plans to form his organization similar to other AMSAT affiliates with an internal newsletter and national nets. AMSAT congratulates the newest affiliated AMSAT organization, BRAMSAT!

SA AMSAT President Hans Van de Groenendahl, ZS6AKV, represented South Africa.

AMSAT President WA2LQQ represented AMSAT U.S. at the Hamvention.

Mini-Board Meeting Meets During Hamvention

Meeting in Dayton this year pursuant to last November's decision to hold a special Spring 1985 session, four of the seven AMSAT Board members reviewed several key issues on Friday evening, 26 April. Present were Directors W6SP, WA2LQQ, JA1ANG and W3IWI. First Alternate Director KE3D was authorized by the Board to vote for Director

W3GEY who, along with W6XN and VE2VQ, were absent.

The Board took no action to replace recently departed General Manager/Executive Director N2CF. Instead, the Directors voted to amend the Bylaws to the wording which existed prior to the hiring of the General Manager. In a practical sense this means AMSAT will operate without a GM/ED for the present. The President will review the tasks required to be performed by the GM/ED and reassign those still relevant. Office Manager Martha Saragovitz is expected to absorb several additional areas of responsibility as a result.

The role of Publisher (of *Satellite Journal*) was discussed and announcement/solicitation will be posted for a volunteer for this vital role. (See elsewhere in this ASR).

The AMSAT OSCAR Spacecraft Laboratory (AOSL) at the Goddard Space Flight Center, Greenbelt, Maryland will be returned to NASA custody upon the recommendation of W3GEY, W3IWI and W4PUJ. Some additional work will be performed there by the Washington Phase 3C team, but when complete the lab will be released. The "fishbowl" had been obtained from NASA at the Visitors' Center at Goddard to facilitate the assembly of Phase 3A. Prior satellites through AO-8 had been assembled in basements and on workbenches. P3A was too large and thus the AOSL deal with NASA was implemented. Work on P3C is being performed at Marburg, AOSL and Boulder. When the work on P3C at the AOSL is complete, the facility will be returned to the custody of NASA.

President WA2LQQ presented an interim report on organizational direction, goals and methods. WA2LQQ also announced he had received proposals from two groups to organize the 1985 Annual General Meeting. Proposals from Dallas/Fort Worth and Houston were received he said. The Board asked the President to establish an objective selection criteria and decide where the 1985 AGM should be held. The 3rd Annual Space Symposium will likely be held in conjunction with the AGM it was stated.

A number of individuals were cited for their contributions to AMSAT. Cited were: W3XO and W4PUJ (Ham-In-Space); KA0CL and WA6VGS (Area Coordinator Development); W0CY (10 years as NCS); N4HY (For QUIKTRAK).

Net Operations Realigned

Net Manager W8GQW has announced the suspension of the 15 Meter International Net on Sundays. According to Wray the decline in band conditions made the 15 meter frequency untenable; essentially useless. The 20 meter net continues at 1900 UTC on 14.282 MHz Sundays. The Southwest Pacific Net switched from 10 meters to 15 meters last autumn when conditions declined there. W6SP and W7FF report moderately usable conditions on the trans-equatorial path to ZL-VK.

The reduction in HF service will be offset by an increase in satellite bulletins and nets. WA2LQQ now transmits bulletins weekly on AO-10 SSC H2 (145.962 MHz). He will be joined soon by W0CA and W8GQW on Mode B. Mode L bulletin service will begin shortly. In addition, advanced voice processing techniques using the latest in ACSSB will provide a notable improvement in bulletin quality beginning in a few weeks.

Project OSCAR - ACSSB Level 1 Compandor Offered

by WB6JNN

A set of Printed Circuit Boards is available through Project OSCAR to provide ACSSB Level 1 through OSCAR 10. These boards provide both compression and equalization during transmission and de-equalization with expansion during reception.

By using ACSSB Level 1, a net increase of 10-20 dB in Signal-to-Noise performance is achieved with signal levels normally encountered via OSCAR 10. This processing will not improve signals that are already too weak to copy by experienced operators, but it will greatly improve the copy and quality of reception of moderately weak stations.

On stations 8-12 dB above the noise level this improvement is about 5-15 dB...increasing with increasing incoming SNR. Signals arriving at 12-18 dB above the noise will produce "near full quieting" when processed at both ends. Signals above 18 dB are, for all practical purposes, "full

quieting".

Please note: Level 1 processing provides companding and equalization only and will not improve rapidly fading signals. We are working on a second add-on unit to provide a pilot tone for AGC purposes but this is not part of the current adapter. These second units will require the Level 1 boards, however.

PRICES: (Donation...all excess to go to satellite projects)

1) LEVEL 1 ADAPTER PC BOARD (Double sided, plated through holes, commercial grade). This includes 10 page documentation package including parts lists, schematics, layout, and parts sources with stock numbers. (TX and RX on one 3.8 x 3.5" PCB) \$15.00

2) LEVEL 1 ADAPTER PC BOARD SET (As above except two 1.9 x 3.5" PC Boards for use in individual Pomona 2902 die-cast boxes or equivalent. Allows totally separate TX/RX functions for individual radios). \$15.00

3) EXTRA BOARDS (1) OR SETS (2). \$10.00

4) EXTRA DOCUMENTATION PACKAGE \$ 1.00

Orbit Predictions By KA9Q

Satellite: OSCAR-10
Catalog number: 14129
Epoch time: 85113.61698093
Tue Apr 23 14:48:27.152 1985 UTC
Element set: 169
Inclination: 26.1937 deg
RA of node: 142.1372 deg
Eccentricity: 0.5974141
Arg of perigee: 6.5944 deg
Mean anomaly: 358.7939 deg
Mean motion: 2.05856717 rev/day
Decay rate: -5e-08 rev/day²
Epoch rev: 1399
Semi major axis: 26105.415 km
Anom period: 699.515673 min
Apogee: 35323.068 km
Perigee: 4131.582 km
Ref perigee: 2669.61860841
Tue Apr 23 14:50:47.766 1985 UTC
Translate freq: 581.0047 MHz
Invert: 1
Beacon: 145.8100 MHz

Satellite: OSCAR-11
Catalog number: 14781
Epoch time: 85104.61168224
Sun Apr 14 1:40:49.345 1985 UTC
Element set: 63
Inclination: 98.1983 deg
RA of node: 171.2312 deg
Eccentricity: 0.0014823
Arg of perigee: 67.0245 deg
Mean anomaly: 293.2678 deg
Mean motion: 14.61959100 rev/day
Decay rate: 9.3e-07 rev/day²
Epoch rev: 5974
Semi major axis: 7062.070 km
Anom period: 98.497968 min
Apogee: 712.151 km
Perigee: 691.215 km
Ref perigee: 2660.62436161
Sun Apr 14 14:59:04.843 1985 UTC
Beacon: 145.8260 MHz

Satellite: RS-5
Catalog number: 12999
Epoch time: 85114.04499014
Wed Apr 24 01:04:47.148 1985 UTC
Element set: 234
Inclination: 82.9612 deg
RA of node: 334.3750 deg
Eccentricity: 0.0009006
Arg of perigee: 173.9553 deg
Mean anomaly: 186.1622 deg
Mean motion: 12.05047476 rev/day
Decay rate: 4e-08 rev/day²
Epoch rev: 14738
Semi major axis: 8033.866 km
Anom period: 119.497367 min
Apogee: 1663.190 km
Perigee: 1648.719 km
Ref perigee: 2670.08506182
Wed Apr 24 02:02:29.341 1985 UTC

Satellite: RS-7
Catalog number: 13001
Epoch time: 85111.03294565
Sun Apr 21 00:47:26.504 1985 UTC
Element set: 201
Inclination: 82.9640 deg
RA of node: 331.2690 deg
Eccentricity: 0.0023158
Arg of perigee: 113.0094 deg
Mean anomaly: 247.3483 deg
Mean motion: 12.08692622 rev/day
Decay rate: 3e-08 rev/day²
Epoch rev: 14746
Semi major axis: 8017.695 km
Anom period: 119.136989 min
Apogee: 1675.963 km
Perigee: 1638.829 km
Ref perigee: 2667.05883489
Sun Apr 21 01:24:43.334 1985 UTC

Satellite: RS-8
Catalog number: 12998
Epoch time: 85112.02881008
Mon Apr 22 00:41:29.190 1985 UTC
Element set: 317
Inclination: 82.9640 deg
RA of node: 338.0682 deg
Eccentricity: 0.0018386
Arg of perigee: 239.5526 deg
Mean anomaly: 120.3767 deg
Mean motion: 12.02954602 rev/day
Decay rate: 4e-08 rev/day²
Epoch rev: 14688
Semi major axis: 8043.187 km
Anom period: 119.705265 min
Apogee: 1695.485 km
Perigee: 1665.909 km
Ref perigee: 2668.00101354
Mon Apr 22 00:01:27.570 1985 UTC

Satellite: OSCAR-9
Catalog number: 12888
Epoch time: 85113.42119989
Tue Apr 23 10:06:31.670 1985 UTC
Element set: 748
Inclination: 97.6289 deg
RA of node: 99.8504 deg
Eccentricity: 0.0004622
Arg of perigee: 99.6676 deg
Mean anomaly: 260.5232 deg
Mean motion: 15.27186382 rev/day
Decay rate: 2.121e-05 rev/day²
Epoch rev: 19687
Semi major axis: 6859.330 km
Anom period: 94.291045 min
Apogee: 504.771 km
Perigee: 498.430 km
Ref perigee: 2669.43929358
Tue Apr 23 10:32:34.965 1985 UTC
Beacon: 145.8250 MHz

OSCAR-11
Mon May 13 00:21:38.717 1985 UTC
Ascending node at -36.7
Nodal period: 98.55602 min
Longitude increment: 24.638507 deg w/orbit
Element set 63, epoch:
Sun Apr 14 14:40:49.345 1985 UTC

RS-5
Mon May 13 01:22:38.880 1985 UTC
Ascending node at 72.6
Nodal period: 119.55396 min
Longitude increment: 30.015452 deg w/orbit
Element set 234, epoch:
Wed Apr 24 01:04:47.148 1985 UTC

RS-7
Mon May 13 01:12:55.892 1985 UTC
Ascending node at 70.2
Nodal period: 119.19347 min
Longitude increment: 29.925248 deg w/orbit
Element set 201, epoch:
Sun Apr 21 00:47:26.504 1985 UTC

RS-8
Mon May 13 01:41:15.86 1985 UTC
Ascending node at 70.6
Nodal period: 119.76195 min
Longitude increment: 30.067472 deg w/orbit
Element set 317, epoch:
Mon Apr 22 00:41:29.190 1985 UTC

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